

Blister Agents (Vesicants)

What are blister agents?

Blister agents are chemicals that can damage skin, eyes and lungs. Some examples of blister agents include lewisite, nitrogen mustard, and sulfur mustard. Sulfur mustard (mustard agent) gets its name from the yellow-brown color of the oily liquid and its mustard-like (or garlic) odor. Experts are concerned that terrorist groups may be able to make blister agents. Blister agents have no industrial uses and are not easily obtainable, but a skilled chemist may be able to make them.

How can people be exposed to blister agents?

Blister agents are liquids that can form vapor that floats into the air. People can be exposed by touching a liquid blister agent or breathing the vapor. Terrorists could release blister agents into a crowded area. Blister agents are more harmful if released in enclosed areas compared to outdoors.

How can people recognize that they are sick from blister agents?

It only takes small amounts to cause serious effects. In general, the longer people breathe blister agent vapor or leave the liquid on their skin, the sicker they get. Blister agents can burn the skin, eyes and lungs. Symptoms include burning eyes; swollen eyelids; red, burning and blistering skin; cough; difficulty breathing; and hoarse voice. Later, a flu-like illness or bronchitis can develop. Days later, the body may be unable to fight infection, and pneumonia or other serious infections develop. Those exposed to large amounts of blister agents can die.

How soon after exposure do the symptoms appear?

Sulfur mustard harms the body within minutes of being exposed but symptoms may not start until 1-24 hours after coming into contact with it. Lewisite irritates the skin, eyes, nose and lungs immediately but the more serious symptoms appear 1-24 hours later.

How can people avoid exposure?

If blister agents are released in an area, people should calmly and quickly move to fresh air. It is dangerous to return to an area with blister agent contamination until it has been cleaned up and checked by experts.

What should people do if they have been exposed to blister agents?

It is important to act quickly if exposed.

- If vapor is breathed, immediately move to fresh air. People exposed to vapor should take off their outer clothing (such as jackets, coats or shirts) right away.
- If liquid chemical soaks clothing or skin, then take the clothes off right away, scrape any oily drops from skin and wash with large amounts of water to flush away the chemical. Soap and water wash is best, but if you cannot find soap, just use water.
- If eyes are splashed with liquid or large amounts of gas, then flush the eyes with water.
- Some blister agents do not cause immediate illness but exposed people, whether sick or not, should seek medical attention immediately. Often the local emergency department is the best place for a medical evaluation after blister agent exposures.

Can blister agents spread from one person to another?

People who only breathe a small amount of the vapor and move quickly out of the area are not likely to have blister agent on their clothes or skin. Blister agents are most likely to spread to another person if the clothing or skin of the person initially exposed is covered in large amounts of vapor or any amount of liquid chemical. Since blister agents are so toxic, the safest step is to remove the outer layer of clothing from anyone that may have been exposed.

Contaminated clothing and other belongings should be placed somewhere away from other people (ideally in a plastic bag if available). Other belongings that need to be bagged along with clothing include watches, jewelry, hair accessories, wallets, keys, purses and briefcases. Remove contact lenses and do not put them back in. Glasses can be put back on after washing them.

How is blister agent poisoning diagnosed and treated?

Doctors may see the effects of poisoning in the eyes, nose, lungs, skin and nervous system and may recognize the effects as a specific poisoning without any blood tests. Blood tests to find blister agents in the body may not be available, but doctors may conduct other tests to help them with patient treatment.

For blister agents, the main treatment is to relieve symptoms. Most people who are exposed get well. An antidote (medicine) exists for lewisite and may be given in the hospital to some patients. Those people with mild sickness may not need treatment with the antidote. People experiencing serious illness from blister agents (e.g., large areas of burns, severe lung problems or eye burns) may need to be hospitalized.

Can exposure to blister agents cause long-term problems?

Most people with mild symptoms will get better and not have serious long-term problems; however, blister agents can permanently scar the eyes and skin and permanently damage the voice and lungs. Those with large exposures may be at increased risk for cancer later in their lives.

Where can more information about blister agents be found?

If you need immediate medical attention, call 911 or go to a local emergency department. For a suspected poisoning, contact the regional poison center (1-800-222-1222). More information about the health effects of chemical poisonings can be found through the Virginia Department of Health at www.vdh.virginia.gov/EPR/Agents.asp or through the U.S. Centers for Disease Control and Prevention at www.bt.cdc.gov or www.atsdr.cdc.gov.